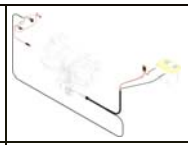
ASSEMBLY INSTRUCTIONS FOR MAG-TRONIC VERSION

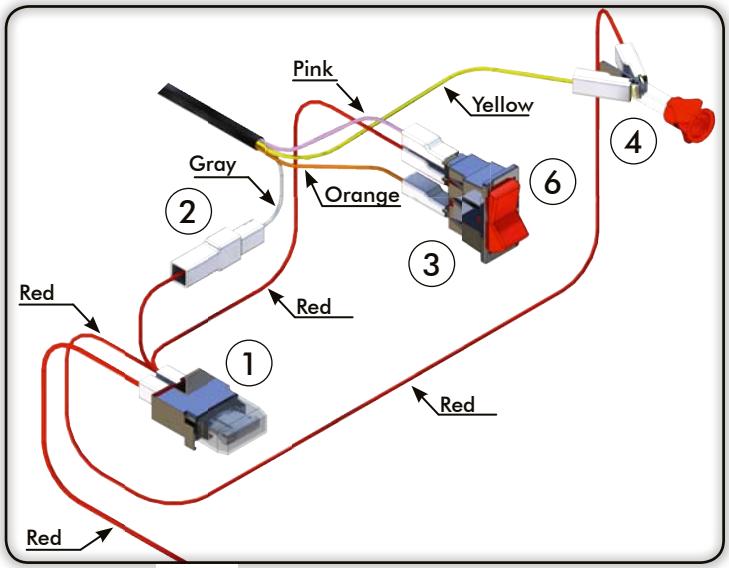
BLUE

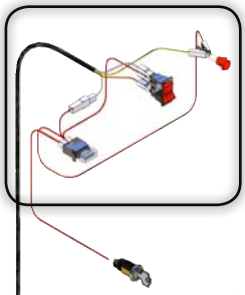
Mag-tronic
HIGH TECH PTO CONTROL SYSTEM

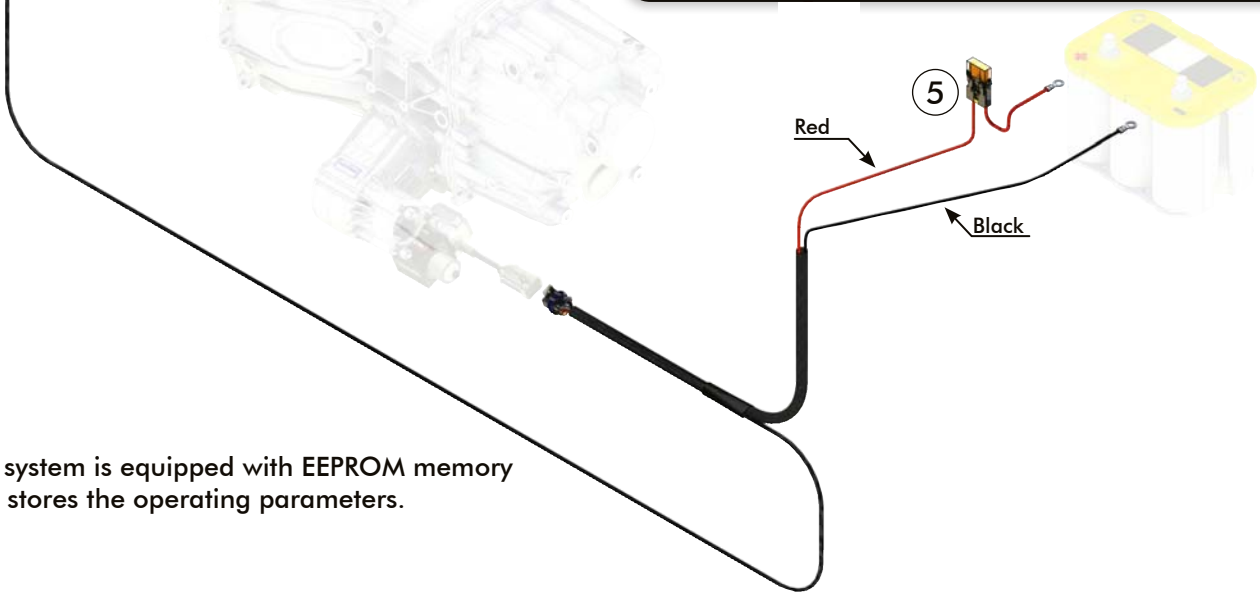
Components for managing the PTO only with electromagnetic control.

Electric kit only PTO 12V code 301-000-03124 inclusive of:			
122-011-01650	100-002-00096	122-011-01865	306-001-01689
Momentary switch	Red cap	Indicator light	Electrical wiring PTO only

Electric kit only PTO 24V code 301-000-03142 inclusive of:			
			
122-011-02006	100-002-00096	122-011-01874	306-001-01689
Momentary switch	Red cap	Indicator light	Electrical wiring PTO only







The system is equipped with EEPROM memory that stores the operating parameters.

WARNING: Before use battery charger or booster to vehicle's battery it is mandatory to remove the fuse 30A from the PTO electric loom kit. The lack of this procedure may lead to damage either the electric kit or the PTO magnet. Restore the fuse in its seat only after making sure that vehicle switches on regularly.
The body-builder is required to give evidence ot this procedure to the end user by applyng the warning label, supplied along with the electric kit, directly on the vehicle's battery

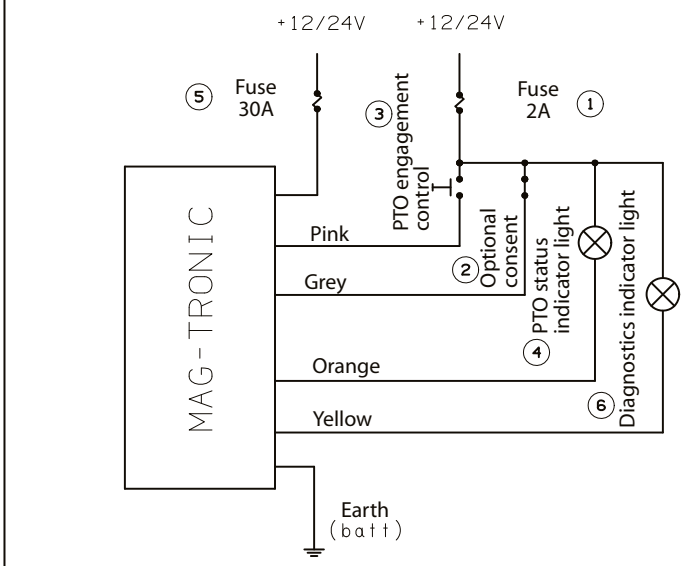
Codice fascicolo: 997-001-01131
Data: Venerdì 12 luglio 2013
Codice foglio:997-001-01097 Rev: AH

OMFB HYDRAULIC COMPONENTS
O.M.F.B. S.p.A. Hydraulic Components
We reserve the right to make any changes without notice.
Edition 2007.04 No reproduction, however partial, is permitted.
Via Cave, 7/9 25050 Provaglio d'Iseo (Brescia) Italy Tel.: +39.030.9830611
Fax: +39.030.9839207-208 Internet:www.omfb.it e-mail:info@omfb.it

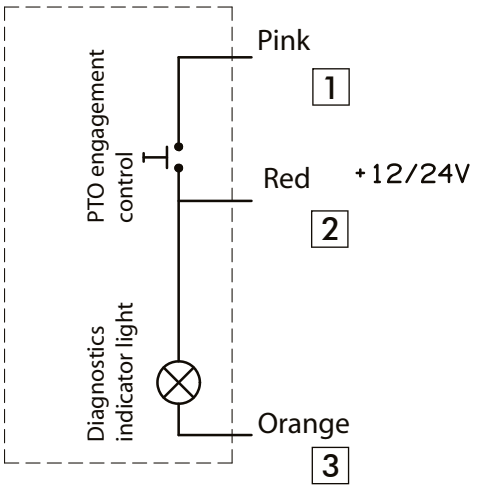
COMPANY WITH QUALITY SYSTEM CERTIFIED BY DNV GL = ISO 9001 =

ELECTRICAL DIAGRAMS

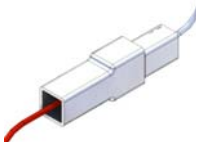
WIRING DIAGRAM



PTO ENGAGEMENT SWITCH DIAGRAM



1 Fuse	2 Optional consent	3 PTO engagement control	4 PTO status indicator light	5 Fuse 30A	6 Diagnostics indicator light (red key)
301-0-03124/42: 2A 301-0-03160/88: 10A					



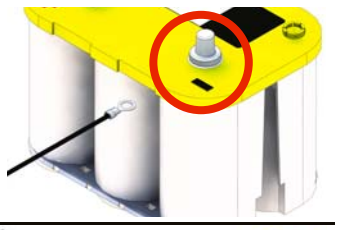
Basic Configuration Assembly

IMPORTANT: Electrical installations on vehicles and the connection of external devices to the original system must be made by expert personnel, under the absolute and sole responsibility of the person in charge of the job.

IMPORTANT: Incorrect connection of the two power cables, red and black, will cause irreparable damage to the system.
In carrying out the assembly, scrupulously follow the order of the operations as described in these instructions. This will minimise the possibility of making assembly errors that could irreparably damage the system.

NEGATIVE battery pole

Connect the black wire marked "-Negative" to the negative pole of the battery.
Do not use an earth on the frame, but only the negative battery pole.



POSITIVE battery pole

After making sure that the fuse is **NOT** fitted in its housing, connect the red wire marked "+Positive" to the positive battery pole.

Codice fascicolo: 997-001-01131
Data: Venerdì 12 luglio 2013
Rev: AH
Codice foglio:997-001-01097

COMPANY WITH QUALITY SYSTEM CERTIFIED BY DNV GL = ISO 9001 =

O.M.F.B. S.p.A. Hydraulic Components
We reserve the right to make any changes without notice.
Edition 2007.04 No reproduction, however partial, is permitted.
Via Cave, 7/9 25050 Provaglio d'Iseo (Brescia) Italy Tel.: +39.030.9830611
Fax: +39.030.9839207-208 Internet:www.omfb.it e-mail:info@omfb.it

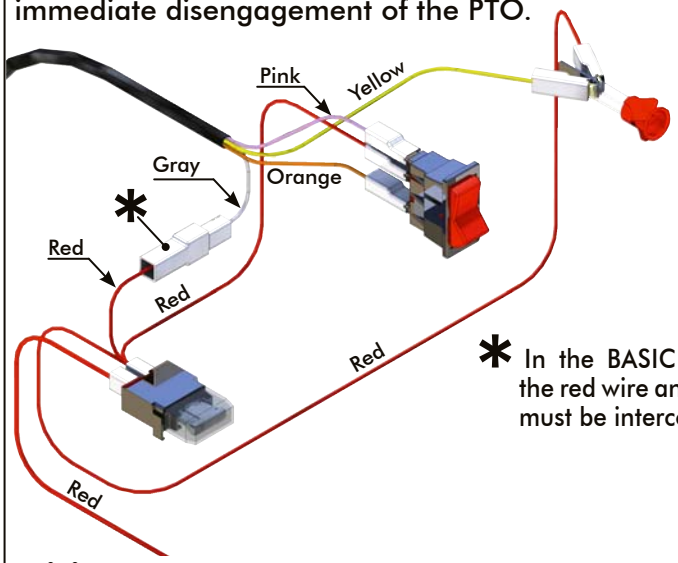
OMFB HYDRAULIC COMPONENTS

BASIC CONFIGURATION

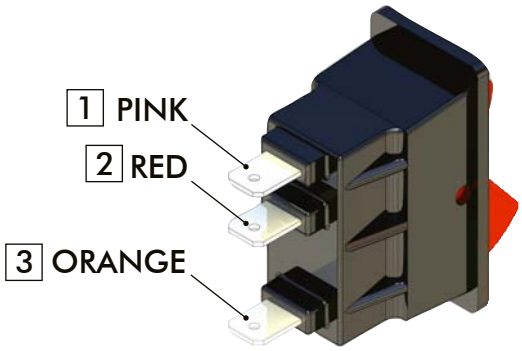
SECTION REGARDING THE WIRING OF THE PTO ONLY
FOR SYSTEMS WITH DUMPING SECTION, SEE PAGE 20

Engagement device:

The kit includes as standard supply a momentary switch for PTO engagement. In any case, MAG-TRONIC automatically recognises whether the PTO engagement control is "interlocking" or "momentary" type. Specifically, if the PTO engagement control signal remains active for more than 10 seconds, it is recognised as interlocking; when it is released the PTO is disengaged. On the other hand, if the PTO engagement control returns to 0 within 3 seconds, it is recognised as momentary; activating it again causes immediate disengagement of the PTO.



✱ In the BASIC configuration, the red wire and the grey wire must be interconnected.



Wiring sequence:

1) Connect the pink wire of the wiring harness to position 1 of the engagement switch.
2) Connect one of the two red wires to position 2 of the engagement switch.
3) Connect the orange wire to position 3 of the engagement switch.
4) Connect the second red wire to one of the two ends of the indicator light.
5) Connect the yellow wire to the other end of the indicator light.
6) Connect the grey wire to the red wire with male ending (if you want to set up using enable signal, refer to the concerning appendix);
7) Connect the free red wire of the positive controls' lead to a positive subkey on the vehicle's original system.

To use the "PTO Engaged" signal differently from the simple driving of the standard indicator light, refer to the specific section of the instructions (page 14).

Warning:

Preferably use a positive subkey for power feed to the control/consent buttons.

To guarantee that the PTO cannot be left engaged unintentionally for excessively long periods of time, the standard version implements a function that automatically disengages it after 6 consecutive hours of engagement. To obtain the automatic disengagement in correspondence with vehicle switch-off with the ignition key, it is necessary to pick up the control positive from a key positive and create one of the configurations shown in the table below:

Engagement control type	Consent control type	Control positive pickup	Automatic disengagement upon removing the ignition key
Momentary	Interlocking	Key positive	Yes
Interlocking			
Interlocking	Momentary	Key positive	Yes

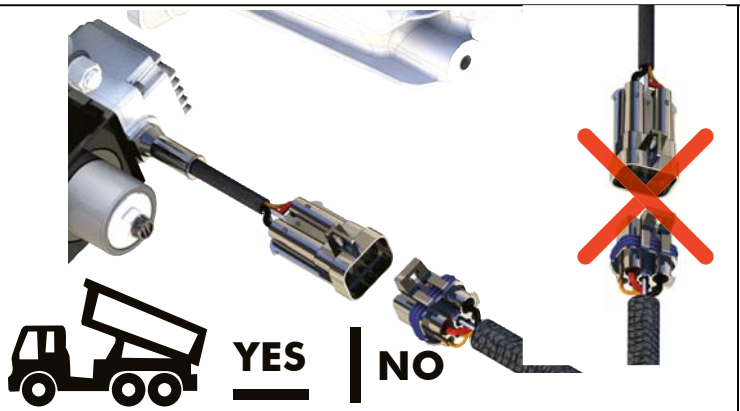
If the control positive pickup is a direct battery positive, the system does not disengage the PTO in correspondence with vehicle switch-off with the ignition key. Moreover, independently of the type of positive used, if both engagement and consent controls are momentary type, the system does not disengage the PTO in correspondence with vehicle switch-off with the ignition key.

Codice fascicolo: 997-001-01131
Data: Venerdì 12 luglio 2013
Codice foglio:997-001-01097 Rev: AH

O.M.F.B. S.p.A. Hydraulic Components
We reserve the right to make any changes without notice.
Edition 2007.04 No reproduction, however partial, is permitted.
Via Cave, 7/9 25050 Provaglio d'Iseo (Brescia) Italy Tel.: +39.030.9830611
Fax: +39.030.9839207-208 Internet:www.omfb.it e-mail:info@omfb.it

COMPANY WITH QUALITY SYSTEM CERTIFIED BY DNV GL = ISO 9001 =

The person fitting the system is the sole one responsible for applying all necessary measures for minimising risks of involuntary activation by the operator. OMFB therefore recommends protecting the positive side of the control buttons with a dedicated key.
In any case, configuration with door enablement per se considerably reduces the risk of involuntary activation. OMFB recommends that the diagnosis indicator always be connected. This indicator can be highly useful in the event of malfunction or failure, as it immediately reveals the type of problem and cause, for resolution. This indicator provides the operator with information on the current condition of system operation.



Connect the wiring harness to the MAG-TRONIC using the 7-way connector.

Make sure that the connectors are thoroughly connected up to the click of the limit stop.

Once the connection is made, clip it to the frame **horizontally** to prevent accumulations of stagnant water.

After checking again to make sure that you have correctly connected the " + Positive" cable to the battery positive and the " - Negative" cable to the battery negative, open the fuse-holder cover, insert the 30A fuse, and re-close the cover.

ENGAGED PTO INDICATOR: ALTERNATIVE USES

The system indicates the current engage/disengage condition of the PTO engage indicator light. The electrical signal provided can control a maximum power load of 250 mA: excess power load can change and cause irreparable damage to the output stage and therefore to the system itself. A configuration such as the one in the diagram, must be employed for any alternative uses to controlling the indicator light supplied in the standard kit (such as enabling PLC systems for aerial platforms, NU equipment or other). The illustrated configuration entails controlling a relay with a recirculation diode assembled on the reel of the same. Any use other than control of the indicator light must therefore involve assembly of an accessory relay not controlled directly by PTO signal on the OMFB system.

Codice fascicolo: 997-001-01131
Data: Venerdì 12 luglio 2013
Codice foglio:997-001-01097 Rev: AH

COMPANY WITH QUALITY SYSTEM CERTIFIED BY DNV GL = ISO 9001 =

O.M.F.B. S.p.A. Hydraulic Components
We reserve the right to make any changes without notice.
Edition 2007.04 No reproduction, however partial, is permitted.
Via Cave, 7/9 25050 Provaglio d'Iseo (Brescia) Italy Tel.: +39.030.9830611
Fax: +39.030.9839207-208 Internet:www.omfb.it e-mail:info@omfb.it

OMFB HYDRAULIC COMPONENTS

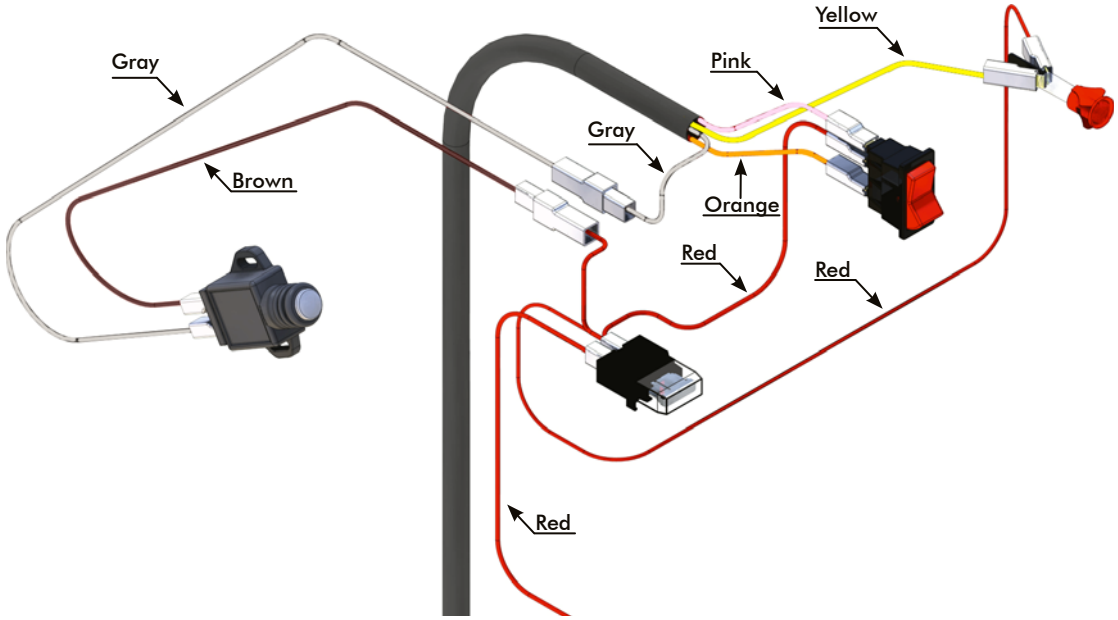
VARIANTS OF BASE CONFIGURATION

CONFIGURATIONS WITH CONSENT/INTERLOCK INDICATOR

OMFB highly recommends using configurations with the consent/interlock indicator, for safety reasons and for allowing the mechanical organs to always work in optimal conditions.
System accessories allowing use of configurations with consent/interlock indicators should be assembled according to both electrical and mechanical state-of-the-art: poor system assembly can result in malfunction.
MAG-TRONIC automatically recognises whether the consent signal is "interlocking" or "momentary" type. Specifically, if the PTO engagement control signal remains active for more than 10 seconds, it is recognised as interlocking; when it is released the PTO is disengaged. On the other hand, if the PTO engagement control returns to 0 within 3 seconds, it is recognised as momentary; activating it again causes immediate disengagement of the PTO.

MOMENTARY CONSENT:
The engagement of the PTO is subordinate to the consent applied for a period less than 5 seconds (e.g.: switching of a switch on the clutch pedal). With the PTO engaged, the momentary activation of the consent (e.g.: pressing the clutch pedal) causes immediate disengagement of the PTO.

INTERLOCKING CONSENT:
The engagement of the PTO is subordinate to the consent maintained for a period of more than 10 seconds (e.g.: switching of a switch on the hand brake). With PTO engaged, the disactivation of the consent (e.g.: release of the hand brake) causes immediate disengagement of the PTO.



These configurations, whether interlocking or momentary, are obtained by connecting a NO switch between the red wire and the grey wire of the standard wiring harness, using the male-female faston connectors normally connected together.

N.B.: After making sure that the mechanical and electrical assembly of the switch has been carried out correctly, is suitably adjusted, and guarantees the necessary reliability, perform a number of test cycles.

The OMFB catalogue includes the clutch switch kit for the main types of vehicles, composed of attachment brackets, screws, momentary switch, and connection cables.

Codice fascicolo: 997-001-01131
Data: Venerdì 12 luglio 2013
Codice foglio:997-001-01097 Rev: AH

O.M.F.B. S.p.A. Hydraulic Components
We reserve the right to make any changes without notice.
Edition 2007.04 No reproduction, however partial, is permitted.
Via Cave, 7/9 25050 Provaglio d'Iseo (Brescia) Italy Tel.: +39.030.9830611
Fax: +39.030.9839207-208 Internet:www.omfb.it e-mail:info@omfb.it
COMPANY WITH QUALITY SYSTEM CERTIFIED BY DNV GL = ISO 9001 =

USER MANUAL

INTRODUCTORY NOTES:

The use of and engagement of PTO requires that the operator knows exactly what he is doing and how the system runs. It is sol responsibility of preparer/agent to provide instruction on how the system works and of its risks from such use.

CONDITIONS OF USE:

Engaging the PTO shall be performed when vehicle is not in motion idling engine and with the contextual pressure of the clutch pedal. Not using the breaks during engagement could cause not only lack of engagement but also damage to the power take-off and vehicle gears.
When the configuration requires a consent signal engagement shall not be performed until the signal is present (for example pressing the breaks, engaging the hand break, other signals from PLC or control system).
The existence of a consent signal on the clutch means that the technical operation times of the clutch itself are respected:
• During the engagement phase, releasing the clutch more than 10 seconds after its activation will lead to the disengagement of the PTO as it is interpreted as stable consent.
• The engagement of the PTO can only take place after at least 5 seconds have passed from the last disengagement by means of the use of the clutch.

ENGAGE PTO:

Configurations which require a consent/interlock signal, this must be activated before giving pressure to the engage button.
-Press the clutch pedal and keep it down
-Press and release the engage button
-Within one and a half seconds the PTO is activated
-The PTO is effectively engaged when the system signals fixed ignition through the PTO engaged light
-Release the clutch pedal
-If the system is not able to complete the engagement procedure on the first attempt, the diagnostics indicator light will light up momentarily and two more attempts will be made automatically.
-If the engagement is accomplished normally, the diagnostics indicator light goes off and the light indicating PTO engaged stays on stably.
-If the two subsequent attempts made by the system in automatic are not successful, both the PTO engaged indicator light and the diagnostics indicator light flash until the subsequent engagement command.
-If the PTO is not engaged following a complete cycle of three attempts, repeat the procedure from the beginning, paying careful attention to follow all the instructions as given.
-If the PTO has not engaged after three complete cycles, contact the vehicle manufacturer or the OMFB technical service.

DISENGAGE PTO:

Configurations which require a consent/interlock signal will automatically disengage the PTO if it does not occur.
-Press the clutch pedal and keep it down
-Press and release the engage button
-The PTO is deactivated
-The PTO is effectively disengages when the system signals fixed ignition PTO engage light goes off
-Release the clutch pedal

INTERNAL DIAGNOSIS AND SIGNALS:

The system monitors fundamental parameters: temperature, power tension, solenoid continuity, solenoid current.
When PTO is disengaged and one of these parameters do not fall within the prescribed range and the system does not allow PTO engagement, signalling the cause with a combination of PTO engage lights and diagnosis (see table page 19).
When PTO is engaged and one of these parameters fall out of range (high or low) the system disengages the PTO and signals the cause with a combination of PTO engage lights and diagnosis.

MANUAL EMERGENCY ENGAGEMENT:

In the event of a malfunction of MAG-TRONIC, the PTO can be engaged manually (see specific instructions provided with the PTO and the emergency screw).

Codice fascicolo: 997-001-01131
Data: Venerdì 12 luglio 2013
Codice foglio:997-001-01097 Rev: AH

COMPANY WITH QUALITY SYSTEM CERTIFIED BY DNV GL = ISO 9001 =

O.M.F.B. S.p.A. Hydraulic Components
We reserve the right to make any changes without notice.
Edition 2007.04 No reproduction, however partial, is permitted.
Via Cave, 7/9 25050 Provaglio d'Iseo (Brescia) Italy Tel.: +39.030.9830611
Fax: +39.030.9839207-208 Internet:www.omfb.it e-mail:info@omfb.it

OMFB HYDRAULIC COMPONENTS

ALARM DIAGNOSTICS TABLE

Type of alarm	PTO indicator light (red cap)	Diagnostics indicator light (red key) engage PTO
Gear locking	Flashing	Flashing
Spontaneouss Disengagement	Flashing	Fixed
Overtemperature	Off	Flashing
Power supply voltage below threshold	Off	Fixed
No consent	Flashing as long as the engagement switch is pressed	Off

ELECTRIC SPECIFICATIONS

PARAMETER	VALUE			NOTES
	min.	typical	max.	
Tension supply	10 V		30 V	Proper functioning value. Under minimum value the card does not supply the solenoid. Above the maximum value the card can break. Never exceed maximum value.
Average engage current		57.0 A		This current value is maintained only for the first 2 seconds form pressing the connection button.
Steady current		2.5 A		This current value is maintained while PTO is connected
Stand-by current			45 mA	
Output current signal line PTO engaged			250 mA	Superior current values can cause momentary malfunctions of definitive damage to system
Output current signal line alarm			250 mA	Superior current can cause momentary malfunctions of definitive damage to system
Input current PTO engaged			3 mA	
Input current sonsent/interlock			3 mA	

ENVIRONMENTAL SPECIFICATIONS

Work temperature	-40°C		85°C	
Storage temperature	-40°C		85°C	

Codice fascicolo: 997-001-01131
Data: Venerdì 12 luglio 2013
Codice foglio:997-001-01097 Rev: AH

O.M.F.B. S.p.A. Hydraulic Components
We reserve the right to make any changes without notice.
Edition 2007.04 No reproduction, however partial, is permitted.
Via Cave, 7/9 25050 Provaglio d'Iseo (Brescia) Italy Tel.: +39.030.9830611
Fax: +39.030.9839207-208 Internet:www.omfb.it e-mail:info@omfb.it

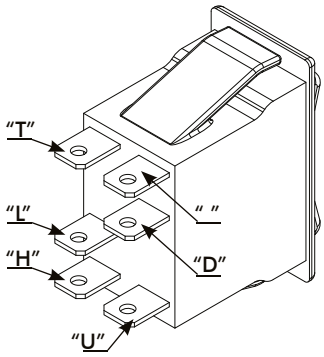
COMPANY WITH QUALITY SYSTEM CERTIFIED BY DNV GL = ISO 9001 =

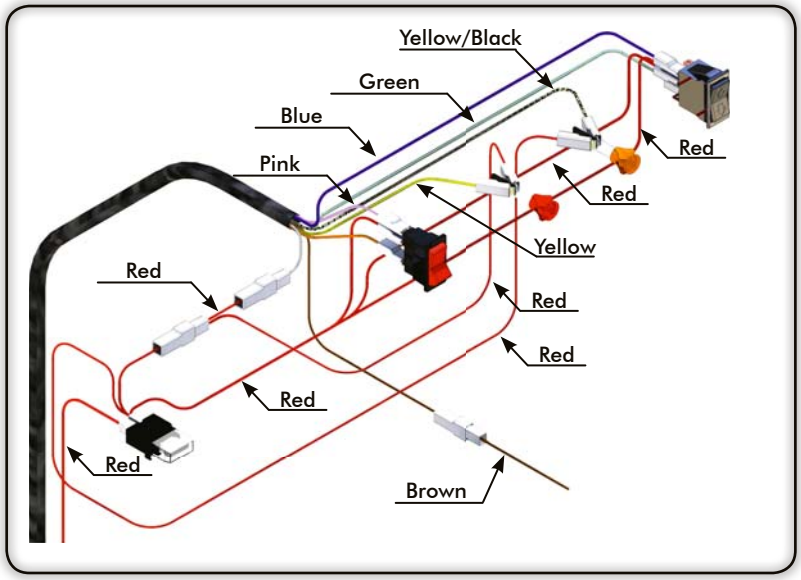
ELECTRIC KIT FOR PTO CONTROL AND TIPPING VALVE

Electric kit **PTO + Tipping valve 12V code: 301-000-03160**
PTO + Tipping valve 24V code: 301-000-03188

Cabin wiring harness:

1) Connect one of the three red wires to one of the two ends of the orange indicator light.
2) Connect the other two red wires to the "D" and "L" contacts of the rocker switch.
3) Connect the yellow/black wire to the other end of the indicator light.
4) Connect the green wire (lower) to the " " contact of the rocker switch.
5) Connect the blue wire (raise) to the "H" contact of the rocker switch.
6) Connect the free red wire of the positive controls' lead to a positive subkey on the vehicle's original system.
7) Connect the brown cable to earth





Frame wiring harr

1) Connect the yellow/black and brown wires to the contacts of the pressure switch.
2) Connect the red wire to the positive contact of the buzzer.
3) Connect the yellow/black wires to the negative contact of the buzzer.
4) Connect connector 2 (raise) to the coil on the side of the maximum pressure valve of the FE40 switch.
5) Connect connector 1 (lower) to the coil on the opposite side.

Codice fascicolo: 997-001-01131
Data: Venerdì 12 luglio 2013
Codice foglio:997-001-01097 Rev: AH

COMPANY WITH QUALITY SYSTEM CERTIFIED BY DNV GL = ISO 9001 =

O.M.F.B. S.p.A. Hydraulic Components
We reserve the right to make any changes without notice.
Edition 2007.04 No reproduction, however partial, is permitted.
Via Cave, 7/9 25050 Provaglio d'Iseo (Brescia) Italy Tel.: +39.030.9830611
Fax: +39.030.9839207-208 Internet:www.omfb.it e-mail:info@omfb.it

OMFB HYDRAULIC COMPONENTS

Product Markings and certification

The **MAG-TRONIC elettromagnetic system complies with the essential requirements and other pertinent provisions set forth in European Directive 2006/28/EC and in ECE/ONU Regulation No 10 Addendum 2**, relating to "Suppression of radio interference **(Electromagnetic Compatibility)** produced by spark-ignition engines fitted to motor vehicles".
Concerning to **Electromagnetic Compatibility 2006/28/EC** is the reference directive for every electrical/electronic system included in road vehicles because it constitutes a "specific directive" for the purposes of Article 2, par. 2, of Council Directive 89/336/EC, effective beginning 1 January 1996.
The provisions of 2006/28/EC must be satisfied, concerning Electromagnetic Compatibility, by all vehicles as defined in Directive **70/156/EC** relating to the **type-approval of motor vehicles and their trailers,** as emended by 98/14/EC, as well as their **components or separate technical units** that are exempt from the compliance with the rules of 89/336/EC.

Conformity tests prescribed by Directive 2006/28/CE and ECE/ONU Reg. No 10 Add. 2 were carried out at the laboratory **PRIMA RICERCA & SVILUPPO** (via Campagna, 58 - 22020 Gaggino Faloppio (CO)).

Compliance of **MAG-TRONIC** electromagnetic system with Dir. 2006/28/EC requirements is certified by the Notified Body NSAI (National Standards Authority of Ireland-Glasnevin, Dublin 9, Ireland (+353-1-80703910)) by releasing the approval number for the product marking:

e24*72/245*2006/28*1406.

Compliance is shown by product marking:

e24 **031406**

Compliance of **MAG-TRONIC** electromagnetic system with the ECE/ONU Reg. No 10 Add. 2 requirements is certified by the Notified Body NSAI (National Standards Authority of Ireland-Glasnevin, Dublin 9, Ireland (+353-1-80703910)) by releasing the approval number for the product marking:

E24 10R-020311.

Compliance is shown by product marking:

E24 **10R** **02 0311**

Codice fascicolo: 997-001-01131
Data: Venerdì 12 luglio 2013
Codice foglio:997-001-01097 Rev: AH

O.M.F.B. S.p.A. Hydraulic Components
We reserve the right to make any changes without notice.
Edition 2007.04 No reproduction, however partial, is permitted.
Via Cave, 7/9 25050 Provaglio d'Iseo (Brescia) Italy Tel.: +39.030.9830611
Fax: +39.030.9839207-208 Internet:www.omfb.it e-mail:info@omfb.it
OMFB HYDRAULIC COMPONENTS
COMPANY WITH QUALITY SYSTEM CERTIFIED BY DNV GL = ISO 9001 =